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Sagittal and pelvic parameters analysis in patients with adolescent idiopathic scoliosis

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Background and purpose

The sagittal alignment of the spine and pelvis in adolescent idiopathic scoliosis is poorly defined in the literature [1-8]. The purpose of this study was to assess the sagittal alignment in scoliosis patients according to curve degree and type.

Material and methods

Sagittal parameters of the spine and pelvis were analysed in lateral standing radiographs of 256 adolescents (13.7±5 years, curve range 4-57) and compared with statistically normal values (NV) in adolescents found in the literature: thoracic kyphosis TK (NV 22–66), lumbar lordosis LL (NV 24-72), pelvic incidence PI (NV 27-71), sacral slope SS (NV 25-57) and pelvic tilt PT (NV −8-16). Lateral standing radiographs were matched with anteroposterior radiograph. Patients were classified according to the entity of scoliosis curves, age, gender and risser score.

Results

There is a weak negative correlation (0.2) between scoliosis and kyphosis. Over 20° Cobb PI increased, mainly due to an increase of the SS. In our population we had low PI and SS, but mainly in less than 20° curves than in higher scoliosis; on the contrary, PT was high in all children. Analysing curves type and decrease of SS we found that this occurs more frequently in patients with double curves (thoracic and thoracolumbar).

Conclusions

PI increases through life, and curves degree worsen with growth, and this influence our results. Patients with spinal deformities have a positive sagittal balance and signs of pelvic retroversion such as decreased SS. According to our data this situation occurs to patients with thoracic and thoracolumbar curves.

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